2012-04-01

Research Naval Postgraduate School, v.4, no. 7, April 2012

Monterey, California, Research and Sponsored Programs, Office of the Vice President and Dean of Research, Naval Postgraduate School (U.S.)

Naval Postgraduate School Research, v. 4, no. 7, April 2012 ; pp. 1-4

VOLUME 4, NO. 7 APRIL 2012

RESEARCH AT NPS

Kristin Giammarco

Kristin Giammarco recently defended her doctoral research, which proposes a formal model-based method called AMBIA, Architecture Model-Based Interoperability Assessment, for assessing interoperability of a system's design.

Axioms and conditions for interoperability are formulated from a widely used vernacular for architecture model elements and relationships, validated at a high abstraction level, and evaluated with specific examples of tangible system designs. A subset of the conditions are shown to be necessary for interoperability of a design between two performer system elements such that one cannot infer that the design is interoperable unless at least the necessary conditions are met. The necessary conditions, repeatable method to improve and extend them, and underlying theory are key contributions of this dissertation, enabling patterns for early identification and isolation of interoperability design flaws in architecture models and providing a conceptual data model for use in many tools in the application domain.

Professor Luqi (CS) chaired the committee and professors **Geoffrey Xie** (CS) and **Cliff Whitcomb** (SE) acted as advisors. Kristin is a Lecturer in the Systems Engineering Department.

BROWN-BAG SEMINAR SERIES

WA-302, 1200-1300

- Wednesday, 11 April, Grants: How We Utilize at NPS
- Wednesday, 9 May, Operational Risk Management

RESEARCH UPDATES

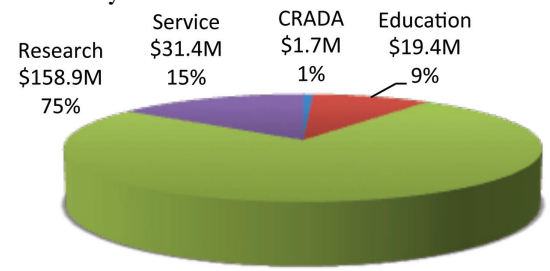
- The Research Board has sent an impact statement to the president regarding the methodology for implementing the FY13 indirect cost rates. The Research Board statement can be found at http://www.nps.edu/research/BoardReports.html. The president has stated that he will bring the message to the AERB (Advanced Education Review Board). FY13 Budget Templates will be made available as soon as the FY13 rates are confirmed.
- Proposal signature pages: FY13 proposal signature and budget templates can be signed digitally and forwarded as a PDF. Send digitally signed proposals to sponsoredprograms@nps.edu. Proposal signature pages are at http://intranet.nps.edu/ResAdmin/prop_sig_page.html. Select the appropriate signature page for your proposal submission. FY12 budget templates are at http://intranet.nps.edu/ResAdmin/FY12/prop_budg_page.html.
- Handouts from the Research Brown Bag Seminar Series are online at http://www.nps.edu/research/BoardReports.html. Topics of interest to faculty for future sessions should be sent to research@nps.edu.

Please submit your faculty and research news (published articles, conference proceedings, conference presentations, books, honors received, accomplishments, milestones, etc.) to research@nps.edu.

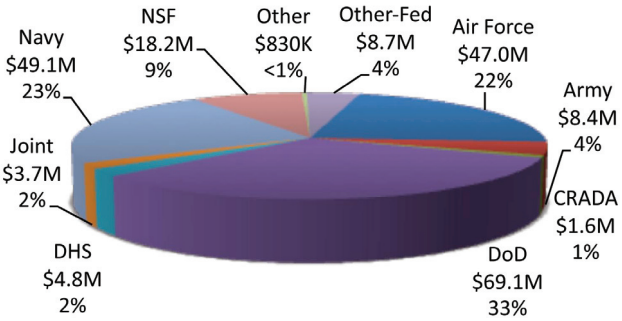
SPONSORED PROGRAMS STATUS, MARCH 2012

FUNDS AVAILABLE: $211.4M

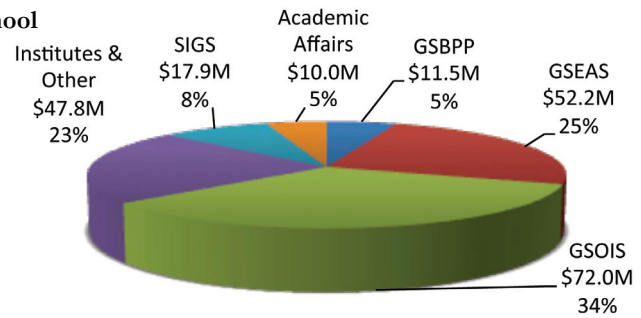
By Type of Activity



By Sponsor



By School



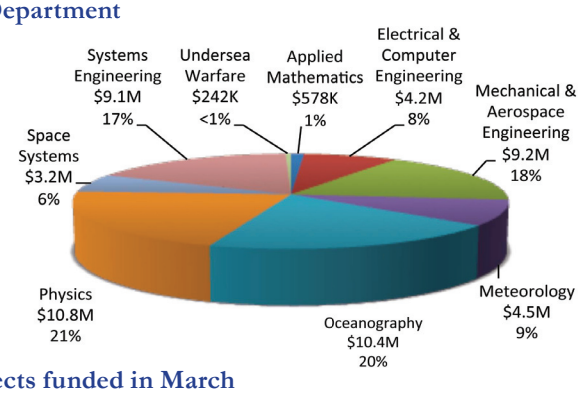
Research and Sponsored Programs Office (RSPO)
Office of the Vice President and Dean of Research
Naval Postgraduate School

Danielle Kuska, Director
Research and Sponsored Programs Office
research@nps.edu

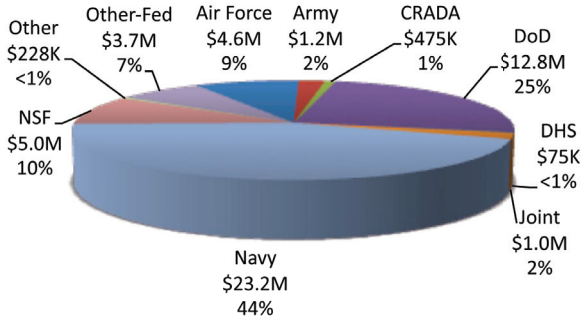
Graduate School of Engineering and Applied Sciences

Funds available to date: $50.2M

By Department



By Sponsor



Projects funded in March

- Electromagnetic Aircraft-Launch Systems Power-Electronics Performance Evaluation, *Bob Ashton, EC* (NAVSEA)
- Extending Raven UAV Using Flexible Solar Cells, *Sherif Michael, EC* (NAWC-Aircraft Division)
- Source ID and Shielding, *Michael Morgan, EC* (ONR)
- DARPA Active Authentication, *Jim Scrofani, EC* (DARPA)
- 2012 SIAM Summer School, *Frank Giraldo, MA* (ONRG)
- Adaptive Optics CoE, *Brij Agrawal, MAE* (ONR, AFRL)
- JWS Methodology Requirements, *Morris Driels, MAE* (JTCG)
- Mitigating Vortex-Dominated, Tip-Leakage, End-Wall Losses in Transonic Splittered Rotor Stage, *Garth Hobson, MAE* (ARO)
- Composite Materials for Ship Applications, *Young Kwon, MAE* (NSWC-Carderock Division)
- Combustion of Bio/Synthetic Fuels and Characterization/ Enhancement in Diesel Engines, *Knox Millsaps, MAE* (ONR)
- FY12 Next-Generation Integrated Power Systems "Swamp Works" Work Plan, *Fotis Papoulias, MAE* (ONR)
- Formation Control, Multicriterion Optimization, and Tradeoff Studies for Small UVs, *Fotis Papoulias, MAE* (ONR)
- Multiscale Pseudospectral Optimal Control for Space Applications, *Michael Ross, MAE* (AFOSR)
- Characterization and Classification of Marine Mammal Vocalizations, *Curt Collins, OC* (CNO)
- Clutter-Depth Discrimination in Shallow Water Waveguide, *Ben Reeder, OC* (ONR)
- ONR INP DE/FEL M&S Research, *Bill Colson, PH* (ONR)
- Vulnerability of ZNO Nanowires in Electronic Noses, *Joe Hooper, PH* (ONR)
- ISR Expertise Development, *Chris Olsen, PH* (OSD)
- Assessment of LENR Boilers, *Mike Melich, S*E (DTRA)

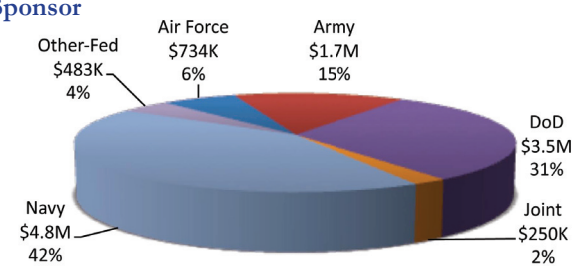
Graduate School of Business and Public Policy

Funds available to date: $11.5M

Projects funded in March

- Pacific Fleet Optimization of Port Visits, *Doug Brook* (U.S. Fleet Forces Command)
- Advanced Acquisition, *John Dillard* (USMC-MARCORSYSCOM)
- EMBA Program, *Bill Hatch* (Various)
- DCAA Scholar in Residence FY12, *Cynthia King* (DCAA)
- American Society of Military Comptrollers Professional Development Institute, *John Mutty* (OASN)
- Chair of Acquisition and Research, *Keith Snider* (PEO Ships)
- OUSD(AT&L) - FY12 Sponsored Acquisition Research Program, *Keith Snider* (SAF/AQXR)

By Sponsor



- International Masters in Public Administation Program Coordination and Program Development, *Jim Suchan* (NIU)

SPAWAR FELLOWSHIPS AWARDED

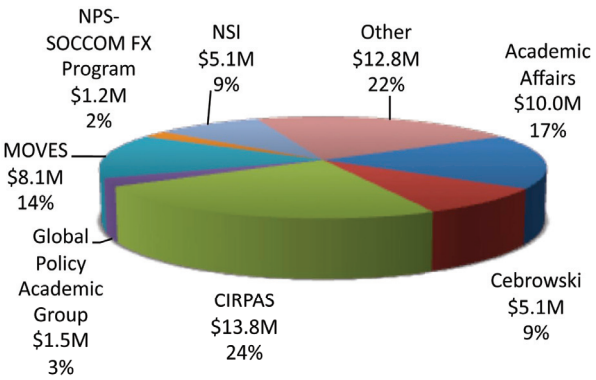
- Underwater Acoustic Network as Deployable Tracking Range, *ENS Rebecca King, USN*
- Landing Autonomous UAV Swarms on Multiple Moving Platforms, *Maj Thomas Dono, USMC*
- Capabilities-Based Prioritization for Service Oriented Architecture Afloat, *LT Matthew Horton, USN*
- Geolocation via Communication Methods in a GPS-Denied Environment, *LT Kaylene Klingenstein-Carter, USN*
- Consolidation of Naval Networks NGEN and One-Net into Single Service Enterprise, *LT Jose Reyes, USN* and *LT Tristan M. Borne, USN*
- Wave-Powered, Unmanned Surface Vehicle Operation in the Open Ocean, *LT Tim Rochholz, USN*
- Autonomous Surf Zone Robot, *LTJG Mika Shuey, USN*

Information on the SPAWAR Fellowships can be found at http://intranet.nps.edu/ResAdmin/studentresearch.html. Proposals are due 31 May 12.

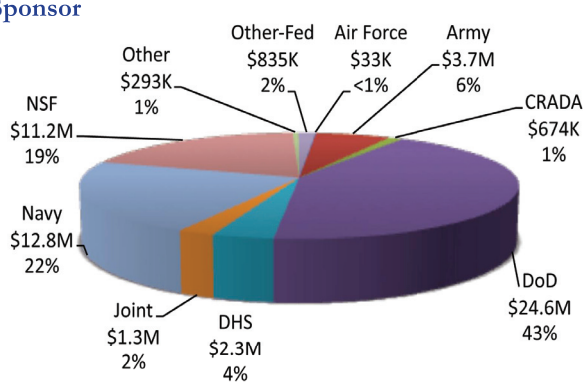
Research and Education Institutes, Centers, and Other

Funds available to date: $49.8M

By Department



By Sponsor



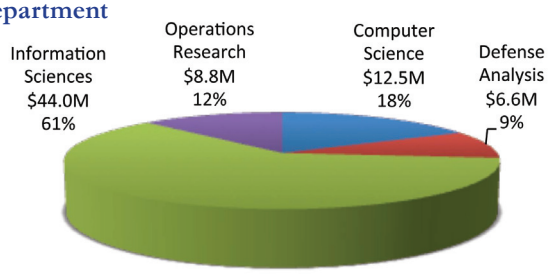
Projects funded in March

- Leading Innovation, *Ron Franklin, CEE* (Various)
- Foundations on Cyber Security, *Alan Howard, USPTC* (NSWC-Port Hueneme)
- Stochastic Analysis and Control of Moving and Rotating Aeroynamic Bodies, *Sri Sritharan, DRCSI* (ARO)
- Emergency Planning & Preparedness, *Alan Jaeger, NSI* (Infragard LA Members Alliance)
- Counter Narcoterrorism Field Test, *Alan Jaeger, NSI* (NAVSEA)
- AEA & Joint Electronic Attack & Compatibility, *Alan Jaeger, NSI* (NAWC-Weapons Division)
- NR KPP for SOS & Guidebook Implementation, *Scot Miller, Cebrowski* (ASN)
- BBN Delay/Disruption-Tolerant Networking Software, *Geoffrey Xie, Cebrowski* (USMC - MARCORSYSCOM)
- Antisubmarine Warfare Data Modeling Group Interoperability & Track Visualization, *Don Brutzman, MOVES* (NAVSEA)
- MMOWGLI Game Platform Development Strategies, *Don Brutzman, MOVES* (ONR)
- Open-DIS Support for High-Performance Simulation Testing, *Don Brutzman, MOVES* (NAWC-Weapons Division)
- Initial Display & Workflow for Sage Optiportal & Rendering Cluster, *Don Brutzman, MOVES* (NUWC-Newport Division)
- JAWAC Agent-Based Modeling, *Chris Darken, MOVES* (NELO)
- Cultural Studies Update, *Rudy Darken, MOVES* (DLI)
- Integration of Delta3D w/ Summit Framework, *Perry McDowell, MOVES* (Sandia National Labs)
- Deployable Force Protection Program, *Ray Buettner, NPS-SOCCOM* (ARL)
- Antenna Pattern Measurement, *Bob Bluth, CIRPAS* (MIT)
- ScanEagle Operations at Camp Roberts Project, *Bob Bluth, CIRPAS* (NSWG TEN)

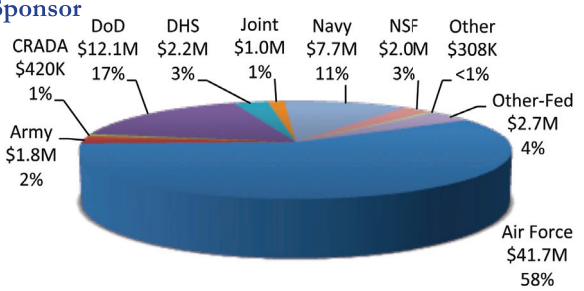
Graduate School of Operational and Information Sciences

Funds available to date: $72M

By Department



By Sponsor



Projects funded in March

- Navy Certifier Program Special Offering, *Karen Burke, CS* (SPAWAR)
- DHS Cybersecurity Curriculum Program, *Cynthia Irvine, CS* (DHS)
- Software Engineering, *Loren Peitso, CS* (VARIOUS)
- Shipboard UAS Employment Tactics (TACMEMO), *Doug Mackinnon, IS* (NWDC)
- Knowledge Superiority Certificate, *Mark Nissen, IS* (Various)
- JWAC Chair at NPS, *Jeff Appleget, OR* (JWAC)
- Research and Development of Tools to Assess Value of Assured Communications and Quality of Services, *Jeff Appleget, OR* (Lockheed Martin)
- Design of Experiments for Follow-on Operational Test of the Aegis Modernization Program, *Pat Jacobs, OR* (NAVSEA)
- MCEA Program, *Greg Mislick, OR* (ASA [FM&C])
- MCEA Program - Cohort 379-123, *Greg Mislick, OR* (Various)
- Energy Return on Investment for Office of Naval Research, *Eva Regnier, OR* (ONR)

...continued on page 4

EFFECTS OF CARBON NANOMATERIAL REINFORCEMENT ON COMPOSITE JOINTS UNDER CYCLIC AND IMPACT LOADING

Meng Hwee Tan–Lieutenant Commander, Singapore Navy
Master of Science in Mechanical Engineering–March 2012
Advisor: Young W. Kwon, Department of Mechanical and Aerospace Engineering
Second Reader: Randall D. Pollak AFOSR/EOARD, London

This study investigated the influence of Multi-Walled Carbon Nanotubes (MWCNTs) and Carbon Nanofibers (CNFs) reinforcement on the behavior of Carbon Fiber Reinforced Polymer (CFRP) joint interface under cyclic and impact loading. Test coupons with pre-cracks were fabricated via Vacuum Assisted Resin Transfer Molding (VARTM) technique with 7.5g/m2 of MWCNTs or CNFs dispersed at the joint interface ahead of the crack tip. The test coupons were loaded in 3-point bending at 2Hz and 10Hz frequencies for the cyclic loading test. The CNTs and CNFs-reinforced samples displayed higher stiffness and had significantly shorter crack propagation lengths under the same loading cycles. Resistance to crack propagation was evident in the reinforced samples as observed using an optical microscope. Similar sets of reinforced as well as non-reinforced samples were subjected to low energy impact tests and their dynamic responses and failures were also compared. CNTs-reinforcement samples experienced failure at higher impact force as compared to non-reinforced samples. However, further testing was recommended to establish the effects of CNFs reinforcement under impact loading. The test results suggested that proper reinforcement of the joint interface using carbon nanomaterial can significantly delay the crack growth, resulting in improvement of composite structural integrity and its service life. *LCDR Tan won the NPS Outstanding Academic Achievement Award for International Students.*

UNITED STATES MARINE CORPS RESERVE FIRST-TERM ATTRITION CHARACTERISTICS

Philip R. Herschelman–Major, United States Marine Corps
Master of Science in Management–March 2012
Advisors: Stephen L. Mehay and Jeremy A. Arkes, Graduate School of Business and Public Policy

This thesis examines the effect of attrition on USMCR NPS marines who enlisted with a 6X2 contract in FY 1994–2005. Three cohorts were established to determine if the events of September 11, 2001 had any impact on attrition rates with this population. The Pre-9/11 cohort enlisted in FY 1994–1995 and was used as a control group. The Overlap-9/11 cohort enlisted in FY 1996–2001, had no expectation of deployment but many did deploy in support of the Global War on Terrorism. The Post-9/11 cohort enlisted in FY 2002–2005 after 9/11 with full expectation to deploy.

The analysis included previous attrition studies, descriptive statistics, and two different probit regression models to determine the effects of various characteristics on attrition. The variables analyzed included deployment variables, demographics, education and aptitude variables, and regional areas. The thesis found a decrease in attrition from the Pre-9/11 cohort to the Post-9/11 cohort. This was most likely caused by an increasing unemployment rate and deployments overseas. Deployments to combat areas decreased the probability of attrition. The other variables remained constant throughout the cohorts with predicted results. Overall, attrition is lower after 9/11 but as the economy improves and deployments decrease, attrition could return to Pre-9/11 levels. *Maj Herschelman received the Rear Admiral Thomas R. McClellan Award for Academic Excellence.*

OUT OF THE BLUE: NATO SOF AIR WING

Andrew M. Jett–Major, United States Air Force
Master of Science in Defense Analysis–March 2012
Advisor: Kalev I. Sepp, Department of Defense Analysis
Second Reader: Brian H. Greenshields, Department of Defense Analysis

There is a critical shortfall in dedicated special operations aviation support for NATO's special operations forces. One way this shortfall can be addressed is through the procurement and sustainment of an organic NATO SOF Air Wing. In 2006, the North Atlantic Treaty Organization's (NATO) Heads of State and Governments endorsed the NATO Special Operations Forces Transformation Initiative, creating what would eventually become the NATO Special Operations Headquarters (NSHQ). NSHQ coordinates, trains, and employs NATO's special operations forces (SOF). These forces have proven invaluable in fighting asymmetric threats due to their light, lean, and agile construct, and their versatile projection of high-impact tactics, techniques, and procedures that create strategic effects.

The research in this study examines NSHQ's requirement for an organic Air Wing and proposes the optimal mix of aviation platforms to support NATO SOF. This optimal mix contains rotary-wing and fixed-wing aviation platforms, as well as intelligence, surveillance, targeting, and reconnaissance aircraft. This research also examines NSHQ's training and readiness organizational structure, and proposes changes based on the development of an organic Air Wing. Dedicated special operations aviation support to NATO special operations forces will greatly enhance the capabilities and mission success of NATO SOF in addressing emerging security challenges. *Maj Jett was awarded the Air Force Association Award for Outstanding U.S. Air Force Student.*

Statistics, continued from page 3

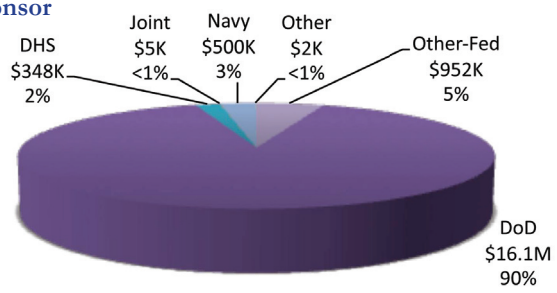
School of International Graduate Studies

Funds available to date: $17.9M

Projects funded in March

- Development & Delivery of E682 Emergency Management in the 21st Century, *Ted Lewis* (DHS)
- MA Security Studies (HDS), *Ted Lewis* (FBI)
- Analysis of Focused Operations and Village Stability Operations in Irregular Warfare in Afghanistan, *James Russell* (TRAC - Monterey)

By Sponsor



THE STRATEGIC CHALLENGE OF CHINA AND THE FUTURE SECURITY ENVIRONMENT

Several hundred attendees from the military, industry, and government attended the 2012 Pacific Operational Science and Technology Conference in Honolulu on March 22nd. The conference focused on operational science and technology issues of concern to U.S. PACOM and American operations across the Asian–Pacific region. The National Defense Industrial Association organized the conference and Lockheed Martin, with support from U.S. PACOM HQ, was sponsor.

Keynote speaker Phillip Karber

Bob McNab on economics and security

NPS **Associate Professor Mie Augier** (Global Public Policy Academic Group and the Center for New Security Economics and Net Assessment) organized a workshop on some of the strategic challenges associated with the rise of China. Facilitated by the Center for New Security Economics and Net Assessment, the workshop assembled a panel of participants from across government and academia to discuss the changing (and increasing) role of China in the global security environment and to consider the implications of China's rise from a variety of perspectives. Mie Augier and **Associate Professor Robert McNab** (Global Public Policy Academic Group and the Center for New Security Economics and Net Assessment) co-chaired the workshop, which brought together key thinkers and scholars from a variety of backgrounds and disciplines.

The evolving role of China is one of the most important developments in the global strategic competition. We no longer have a bipolar world war, with a clearly defined opponent (Soviet) that we know well and understand. Instead, we confront several interrelated problems, including a) the rise of terrorism; b) the increasing spread of nuclear weapons; c) global warming, overpopulation, and scarce resources; and d) the rise of certain new powers, notably China. These problems overlap and are often interrelated.

The panel discussed ways to improve our understanding of the strategic challenges China is bringing to the future security environment. Panelists gave a breadth of presentations and engaged in lively Q and A exchanges with workshop participants. For example, Phillip Karber of the Potomac Foundation and Georgetown University delivered the keynote presentation on the Chinese underground "Great Wall," a topic of great strategic, theoretical, and political significance. Charles Wolf, Jr., of the RAND Corporation discussed China's soft-power strategies; Diego A. Ruiz Palmer, from NATO headquarters, spoke about reassessing transatlantic relationships in light of trends in the Asian–Pacific region; Sorin Lungu from the National Defense University discussed the changing structure of the aerospace industry in China and the West; and Alex Vuving from the Asia–Pacific Center for Security Studies considered China's interest in Southeast Asia. McNab delivered a presentation prepared with Mie Augier and **Research Assistant Jerry Guo** (Global Public Policy Academic Group and the Center for New Security Economics and Net Assessment) on issues relating to economic warfare and the "economic togetherness" of the U. S. and China.

Workshop participants discussed new perceptions about China's growing power; the importance of understanding Chinese culture (and not just theories of strategic culture); the changing role of alliances; and the interrelations between economics, economies, and security. They emerged with a better understanding of the kinds of questions that should be asked when thinking about China. While none of the panelists claimed a full grasp of the Chinese situation, all emphasized that the questions raised were important to achieving a reliable assessment of China from a strategic, research and economic perspective.

A conference report and background readings will be available soon and may be obtained by emailing meaugier@nps.edu.

BKCASE STUDY

NPS has been leading a major systems-engineering initiative, the Body of Knowledge and Curriculum to Advance Systems Engineering (BKCASE) project, in partnership with the Systems Engineering Research Center, a DoD UARC.

Over 70 academics and practitioners from around the world are on the author team, and this is one of the significant collaboration areas between NPS and AFIT. **Professor Dave Olwell** (Systems Engineering (SE) Department) is the NPS PI and a co-PI for the overall project, joined by **Professor Chuck Calvano (SE), Associate Professor Ray Madachy (SE)**, and **Research Assistant Stephanie Enck (SE).** The project is funded by OSD and sponsored by IEEE-CS and INCOSE.

In March, the BKCASE team released version 0.75 of the Systems Engineering Body of Knowledge (SEBoK), which consists of 28 knowledge areas and 121 articles. There are five use cases, seven case studies, and seven vignettes describing the application of systems engineering. It includes a glossary of over 400 terms, and hundreds of references. The SEBoK has also been published as a wiki, allowing easy updating and community feedback, at www.sebokwiki.org.

The final version of the SEBoK will be published in September 2012. At that point, stewardship will be governed by an editorial board under the auspices of INCOSE and IEEE-CS, with NPS providing an initial member.

The second major product of the BKCASE team is the Graduate Reference Curriculum in System Engineering (GRCSE). Version 0.5 was published in December, 2011. The first drafts of GRCSE have already had a significant impact on curricular design and are inspiring lively debate about the common features, present and desired, of systems-engineering curricula. The final version of GRCSE will be published in December 2012.

CONGRATULATIONS ON TENURE AND PROMOTIONS

Award of Tenure:
Associate Professor Simson Garfinkel, Computer Science
Professor Ronald Giachetti, Systems Engineering
Associate Professor Joshua Hacker, Meteorology
Associate Professor Nita Shattuck, Operations Research
Professor Oleg Yakimenko, Systems Engineering

Promotion to Associate Professor and Award of Tenure
David Alderson, Operations Research
Jomana Amara, Defense Management Resources Institute
Aruna Apte, Graduate School of Business and Public Policy
Michael Freeman, Defense Analysis

Promotion to Professor and Award of Tenure
James "Clay" Moltz, National Security Affairs

Promotion to Professor
Matthew Carlyle, Operations Research
Christopher Frenzen, Applied Mathematics

Promotion to Senior Lecturer
Meghan Quinn Kennedy, Operations Research

APPLIED MATHEMATICS

Professor Frank Giraldo will be a visiting fellow of the Newton Institute for Mathematical Sciences, Cambridge University, for four months, beginning August 2012. Giraldo has also been asked to serve on the scientific advisory committee for the Korean Institute of Atmospheric Prediction Systems, a new institute for creating South Korea's next prediction system.

Eroh, L., **Gera, R.**, et al (2012). "Closed 3-stop center and periphery in graphs." *Acta Mathematica Sinica-English Series,* 28(3), 439-452.

Lindquist, J. M., **Neta, B., Giraldo, F. X.** (2012). "High-order non-reflecting boundary conditions for dispersive waves in polar coordinates using spectral elements." *Applied Mathematics and Computation,* 218(12), 6666-6676.

CENTER FOR DECISION, RISK, CONTROLS AND SIGNALS INTELLIGENCE (DRCSI)

S. S. Sritharan, "Stochastic Navier-Stokes Semimartingale: Solvability, Controls and Large Deviations," keynote lecture at American Mathematical Society (AMS) Sectional Meeting, Stochastic Analysis and Applications Sessions, Tampa, FL, 10 March 2012.

Meng Xu of Rockefeller University and **S. S. Sritharan,** "A Stochastic Lagrangian Particle Model and Nonlinear Filtering of Euler Flows with Jumps," American Mathematical Society (AMS) Sectional Meeting, Stochastic Analysis and Applications Sessions, Tampa, FL, 11 March 2012.

National Research Council Fellow B. Fernando and S. S. Sritharan, "Nonlinear Filtering of Stochastic Navier-Stokes Equation with Levy Noise," presented at Society of Industrial and Applied Mathematics (SIAM) Meeting, Huntsville, AL, 24 March 2012.

National Research Council Fellow Kumarasamy Sakthivel and **S. S. Sritharan,** "Martingale Solutions to Stochastic Navier-Stokes Equation with Levy Noise" presented at Society of Industrial and Applied Mathematics (SIAM) Meeting, Huntsville, AL, 24 March 2012.

Nathan Moshman (MAE), **Garth Hobson** (MAE) and **S. S. Sritharan** (DRCSI) submitted 21-page manuscript, "A Method for Optimally Controlling Unsteady Shock Strength in One Dimensions" and a 24-page manuscript, "Optimal Control of Shock Wave Attenuation using Liquid Water Droplets with Application to Ignition Overpressure in Launch Vehicles" for journal publication.

Mohsen Tadi (CU-Denver) and **S. S. Sritharan** (DRCSI), "Identification of Far Field Electric Field Based on Near Field Distributed Measurements,"25 pp, has been accepted for publication in the *International Journal of Computational and Applied Mathematics.*

COMPUTER SCIENCE

Jonathan Valamehr, **Ted Huffmire, Cynthia Irvine,** Ryan Kastner, C. K. Koc, **Timothy Levin,** and Timothy Sherwood, "A Qualitative Security Analysis of a New Class of 3-D Integrated Crypto Co-processors, *LNCS, Berlin Heidelberg: Springer-Verlag,* March 2012.

Nguyen, T., Gondree, M., Khosalim, J., Shifflett D., Levin, T. Irvine, C., "An Approach for Cross-Domain Intrusion Detection," 7th International Conference on Information Warfare and Security (ICIW 2012), Seattle, March 2012, pp. 203-212.

Denning, P. J. (2012). "The profession of IT the idea idea." *Communications of the ACM*, 55(3), 30-32.

Garfinkel, S. (2012). "Digital forensics XML and the DFXML toolset." *Digital Investigation*, 8(3-4), 161-174.

Lin, P., Allhoff, F., & **Rowe, N. C.** (2012). "Computing ethics war 2.0: Cyberweapons and ethics." *Communications of the ACM,* 55(3), 24-26.

GLOBAL PUBLIC POLICY ACADEMIC GROUP

Augier, M., and **R.M. McNab.** (2011). "New Security Economics: A Challenge for Future Leaders." In J. Belanger and P. Lew (Eds.), *Developing the Next Generation of Military Leaders: Challenges, Imperatives and Strategies.* Ontario: Canadian Defense Academy Press.

GRADUATE SCHOOL OF BUSINESS AND PUBLIC POLICY

Aten, K., & Howard-Grenville, J. (2012). "Encouraging trade at the boundary of organizational culture and institutional theory." *Journal of Management Inquiry,* 21(1), 114-117.

Aten, K., Howard-Grenville, J., & Ventresca, M. J. (2012). "Organizational culture and institutional theory: A conversation at the border." *Journal of Management Inquiry*, 21(1), 78-83.

Shen, Y., Arkes, J., & Williams, T. V. (2012). "Effects of Iraq/Afghanistan deployments on major depression and substance use disorder: Analysis of active duty personnel in the US military." *American Journal of Public Health,* 102, S80-S87.

INFORMATION SCIENCES

Place, W. D. participated in Association for Unmanned Vehicle Systems International board of directors meeting, 6 Feb. 2012. Attended AUVSI's Unmanned Systems Program Review in Washington, D.C., 7-9 March 2012

Place, W. D., "Navy UAS Overview," presented to Technology Training Corporation Conference, San Diego, CA, 13-15 March 2012

Place, W. D., "Navy UAS Overview," presented to Miramar Rotary Club, San Diego, CA, 24 March 2012.

MECHANICAL AND AEROSPACE ENGINEERING

Distinguished Professor Brij Agrawal was awarded the Department of Navy Superior Civilian Service Award for exceptional work in creating educational and research programs in space systems engineering and establishment of the Spacecraft Research and Design Center and the Adaptive Optics Center of Excellence for National Security (funded by ONR, NRO and AFRL). As the fruit of his distinguished career at the school, the NPS space systems engineering program is considered the best in the nation. The new Adaptive Optics Center of Excellence, supported by three agencies, suggests the value of NPS multidisciplinary research for national security, and testifies to Prof. Agrawal's vision and talent.

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METEOROLOGY

Allen, M. S., & **Eckel, F. A.** (2012). "Value from ambiguity in ensemble forecasts." *Weather and Forecasting*, 27(1), 70-84.

Eckel, F. A., Allen, M. S., et al. (2012). "Estimation of ambiguity in ensemble forecasts." *Weather and Forecasting,* 27(1), 50-69.

Hegg, D. A., Covert, D. S., **Jonsson, H. H., Woods, R. K**. (2012). "A simple relationship between cloud drop number concentration and precursor aerosol concentration for the regions of earth's large marine stratocumulus decks." *Atmospheric Chemistry and Physics*, 12(3), 1229-1238.

Huang, Y., Montgomery, M. T., Wu, C. (2012). "Concentric eyewall formation in typhoon sinlaku (2008). part II: Axisymmetric dynamical processes." *Journal of Atmospheric Sciences,* 69(2), 662-674.

Montgomery, M. T., Davis, C., Dunkerton, T., Wang, Z., Velden, C., Torn, R., et al. (2012). "The Pre-Depression Investigation of Cloud-Systems in the Tropics (Predict) Experiment: Scientific Basis, New Analysis Tools, and Some First Results." *Bulletin of the American Meteorological Society,* 93(2), 153-172.

MOVES

Sadagic, A. (2012). "Validation of Virtual Humanoid Intelligent Agents in Virtual Reality Systems," poster presented at IEEE VR 2012, Orange County, CA.

Amela Sadagic served as exhibits co-chairman at IEEE VR 2012, Orange County, CA (http://conferences.computer.org/vr/2012/).

NATIONAL SECURITY AFFAIRS

Maiah Jaskoski, "The Ecuadorian Army: Neglecting a Porous Border while Policing the Interior," *Latin American Politics and Society* 54, no.1 (Spring 2012): 127–157.

Maiah Jaskoski, "Civilian Control of the Armed Forces in Democratic Latin America: Military Prerogatives, Contestation, and Mission Performance in Peru." *Armed Forces & Society* 38, January 2012

Maiah Jaskoski, "Resource Conflicts: Emerging Struggles over Strategic Commodities in Latin America." Scope Report, U.S. Naval Postgraduate School Center on Contemporary Conflict, March 2012.

Piombo, Jessica, "US Africa Policy: Rhetoric Versus Reality." *Current History*, May 2012.

Jessica Piombo, "Peacebuilding from the Inside and Out: Comparing South Africa and Burundi," presentation for a postgraduate seminar series in political studies at the University of the Western Cape, South Africa, March 14, 2012.

Assistant Professor Jessica Piombo participated in a roundtable on electoral system reform in South Africa, organized by the Southern African Catholic Bishops' Conference Parliamentary Liaison Office (CPLO) of South Africa.

Zachary Shore, "On High Alert," review of David C. Unger's *The Emergency State: America's Pursuit of Absolute Security at All Costs* (New York: Penguin Press, 2012), in the *San Francisco Chronicle*, Sunday March 11, 2012.

Zachary Shore, "A Sense of the Enemy: Refocusing Prediction in Military and Foreign Affairs," *Joint Force Quarterly,* March 2012.

OCEANOGRAPHY

Colosi, J. A., Duda, T. F., Lin, Y., Lynch, J. F., Newhall, A. E., & Cornuelle, B. D. (2012). "Observations of sound-speed fluctuations on the new jersey continental shelf in the summer of 2006," *Journal of the Acoustical Society of America,* 131(2), 1733-1748.

Colosi, J. A., Duda, T. F., & Morozov, A. K. (2012). "Statistics of low-frequency normal-mode amplitudes in an ocean with random sound-speed perturbations: Shallow-water environments," *Journal of the Acoustical Society of America,* 131(2), 1749-1761.

Radko, T., & Smith, D. P. (2012). "Equilibrium transport in double-diffusive convection," *Journal of Fluid Mechanics,* 692, 5-27.

OPERATIONS RESEARCH

Fricker, R. D., Jr. & Banschbach, D. (2012). "Optimizing biosurveillance systems that use threshold-based event detection methods," *Information Fusion,* 13(2), 117-128.

MEMORANDA OF UNDERSTANDING/ AGREEMENT (MOU/MOA)

Partner: Asymmetric Warfare Group
NPS Contact: John Arquilla, Department of Defense Analysis
Summary: This MOU establishes collaborative responsibilities between NPS, Department of Defense Analysis and AWG and documents the intent of the parties to engage in efficient and effective use of each organization's resources and expertise in the accomplishment of assigned missions.

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRADA)

Title: Coastal Ocean Modeling of Nonlinear Internal-Wave Physical and Acoustic Effects
Partner: Woods Hole Oceanographic Institute
PI: John Colosi, Department of Oceanography
Summary: Collaborators will develop models, tools, theory, and methodology to expand understanding of acoustically important oceanic processes, leading to improved propagation predictions.

Title: Emergency Planning & Preparedness Research Program
Partner: InfraGard Los Angeles Members Alliance, Inc.
PI: Alan Jaeger, Center for Asymmetric Warfare
Summary: Principals will leverage civil and military operational response best practices, plans, templates and tools with the goal of developing realistic emergency and disaster plans that ensure business continuity in order to support an integrated recovery effort with and between federal, state, local and private sector.

Title: R&D of Tools to Assess Value of Assured Communications and Quality of Services
Partner: Lockheed Martin Space Systems Company
PI: Jeffery Appleget, Department of Operations Research
Summary: Collaborators will research impact on DoD operations of denial of services (DoS) provided by space-based systems and develop means to understand operational impacts caused by DoS for developing effective mitigation strategies.

Faculty News, continued from page 7

Jones, J. C.**, Burks, R.,** Owens, B. D., Sturdivant, R. X., Svoboda, S. J., & Cameron, K. L. (2012). "Incidence and risk factors associated with meniscal injuries among active-duty US military service members," *Journal of Athletic Training,* 47(1), 67-73.

PHYSICS

A proposal by **Associate Professor John Lewellen** to the Army Research Office, "Investigation of Beam Source and Collective Effects and Instabilities Relevant to High-Power Free-Electron Laser Performance," has been recommended for an award. The proposal was submitted in response to the FY12 BAA, High Energy Laser Multidisciplinary Research Initiative Program solicitation.

F. Alves, B. Kearney, **D. Grbovic, G. Karunasiri,** "Strong terahertz absorption using SiO2/Al based metamaterial structures." *Applied Physics Letters*, March 2012.

Fabio Alves, Dragoslav Grbovic, Brian Kearney, and **Gamani Karunasiri,** "MEMS Bi-material Terahertz Sensor with Integrated Metamaterial Absorber." *Optics Letters,* March 2012

SPACE SYSTEMS ACADEMIC GROUP

Sands, Timothy A., Kim, J. J., Agrawal, B. N., "Nonredundant Single-Gimbaled Control Moment Gyroscopes," *Journal of Guidance, Control, and Dynamics,* 35(2) 578-587.

SYSTEMS ENGINEERING

Professor Ronald Giachetti was a panelist in system-of-systems architecture at the Conference on Systems Engineering Research, St. Louis, MO, March 20–22.

Giachetti, Ronald, "A flexible approach to realize an enterprise architecture." *Procedia Computer Science,* vol. 8, 2012, pp. 147-152.

R. Millar, D. Olwell, "Parametric Models for Aircraft Engine Removals Resulting from Foreign Object Damage," *Naval Engineers Journal*, 16 March 2012.

Richard Millar, Kristin Giammarco, "Integrated Instrumentation and Sensor Systems Functional Model and Taxonomy," has been accepted for publication by *ASCE Journal of Aerospace Engineering.*

Associate Professor Richard Millar organized and chaired a session at the IEEE Aerospace Conference, reviewed four SBIR proposals on behalf of the Department of Energy, and reviewed a paper submitted to the *NAVAIR Journal.*

Chung, T. H. & Burdick, J. W. (2012). "Analysis of search decision making using probabilistic search strategies." *IEEE Transactions on Robotics,* 28(1), 132-144.

Mamun, K. A., Mace, M., Gupta, L., Verschuur, C. A., Lutman, M. E., Stokes, M., **Vaidyanathan, R.** (2012). "Robust real-time identification of tongue movement commands from interferences," *Neurocomputing*, 80, 83-92.

TECHNICAL REPORTS PUBLISHED

NPS-CS-12-001	Runtime Monitoring and Verification of Systems with Hidden Information	D. Drusinsky
NPS-CS-12-002	Behavioral and Temporal Pattern Detection within Financial Data with Hidden Information	D. Drusinsky
NPS-GSBPP-12-005	Recruiting, Advertising and Marketing Strategies in All-Volunteer Force Nations: Case Studies of Canada, Australia, the United Kingdom, and the United States	C. Stoker, S. Mehay

Technical reports may be obtained at http://www.nps.edu/Research/TechReports.html